

## REMARKS

Claims 1-14 and 17-23 were previously pending in this patent application. Claims 1-14 and 17-23 stand rejected. Herein, Claims 1, 7, and 14 have been amended. Support for the amendments may be found in, but is not limited to, Figure 8 and pages 26-27 of the specification. Accordingly, after this Amendment and Response After Final Action, Claims 1-14 and 17-23 remain pending in this patent application. Further examination and reconsideration in view of the claims, remarks, and arguments set forth below is respectfully requested.

### 35 U.S.C. Section 103(a) Rejections

Claims 1-14 and 17-23 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Marik, U.S. Patent No. 5,903,718 (hereafter Marik), in view of Grunert, U.S. Patent No. 6,366,878 (hereafter Grunert), and further in view of Dey, U.S. Patent No. 5,438,672 (hereafter Dey). These rejections are respectfully traversed.

It is improper to combine references where the references teach away from their combination. In re Grasselli, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983) (The claimed catalyst which contained both iron and an alkali metal was not suggested by the combination of a reference which taught the interchangeability of antimony and alkali metal with the same beneficial result, combined with a reference expressly excluding antimony from, and adding iron

to, a catalyst.). The prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives if the disclosure does not criticize, discredit, or otherwise discourage these alternatives. In re Fulton, 391 F.3d 1195, 1201, (Fed. Cir. 2004).

In response to assertions that the Marik reference teaches away from combining with references Grunert and Dey, the Advisory Action at page 2 includes a first passage, "Marik teaches software to debug an 8031 system without the need for an in-circuit emulator and its associated hardware." While Marik (Col. 4, lines 9-11) does characterize its invention as being directed to debugging 8031 based systems without the need for an in-circuit emulator and its associated hardware, Marik (Col. 1, lines 15-47) also describes a first technique to debug that uses a program monitor (which is intrusive software code located in target memory to debug computer programs and operates in conjunction with and monitors the operation of a main computer program that controls the functions of a microcontroller-based target circuit) and a second technique to debug that uses an in-circuit emulator. More importantly, Marik (Abstract; Col. 2, lines 22-27) specifically states that its invention is directed to a remote program monitor method and system for self-debugging. According to Marik (Col. 5, line 43 to Col. 6, line 35; Col. 3, line 65 to Col. 4, line 4), the remote program monitor method and system provides several in-circuit emulator types of operations/functions, such as tracing, breaking, and single stepping, unlike prior art program monitors. That is, since Marik utilizes the first technique to debug

that uses a program monitor, there is no need for the second technique to debug that uses an in-circuit emulator.

Further, the Advisory Action at page 2 includes a second passage, "Marik DOES NOT TEACH THAT IN-CIRCUIT EMULATORS ARE UNDESIRABLE." This second passage is clearly contradicted by Marik. According to Marik (Col. 1, lines 47-55; Col. 2, lines 4-11), drawbacks of the in-circuit emulator include the burden of considerable expense for the emulator adapter board and pod unit and use of valuable slot space within the PC. Moreover, Marik (Col. 4, lines 4-9) states that in-circuit emulators are extravagant and expensive hardware tools for most prototype debug applications and are often very awkward or impractical to insert in a product's microcontroller socket in a customer environment to debug a field problem. Also, Marik (Col. 4, lines 22-35) identifies objects of its invention as providing a method and system for debugging 8031 based systems without installing a PC emulator adapter, without purchasing a stand-alone emulator called an Expansion Box, and without attaching an emulator pod to the product's microcontroller socket in lieu of the product's microcontroller. That is, Marik criticizes, discredits, or otherwise discourages the in-circuit emulator as an alternative to the program monitor. Therefore, Marik does teach away from in-circuit emulators according to the decision In re Fulton.

The Advisory Action at page 2 includes additional statements that are clearly inconsistent with and unsupported by Marik. These statements include "Marik teaches an improvement to in-circuit emulators that requires less

hardware than the prior art”, and “Marik intends to IMPROVE upon in-circuit emulators (by providing similar functionality in software).” Rather than improving upon in-circuit emulators, Marik (Abstract; Col. 2, lines 22-27; Col. 4, lines 9-11) improves upon program monitors for debugging and eliminates the need for an in-circuit emulator and its associated hardware.

Furthermore, it is stated at page 2 of the Advisory Action, “Where the prior art teaches a hardware in-circuit emulator with desirable features not taught by Marik, a person of ordinary skill in the art would be motivated to combine that in-circuit emulator with Marik because Marik does not ‘teach away’ from in-circuit emulators because Marik does not disclose that in-circuit emulators are undesirable.” This statement is incorrect. Since Marik (Col. 4, lines 9-11; Col. 4, lines 22-35; Abstract; Col. 2, lines 22-27) specifically excludes the need for an in-circuit emulator and includes the use of a program monitor and since Marik (Col. 1, lines 47-55; Col. 2, lines 4-11; Col. 4, lines 4-9; Col. 4, lines 22-35) criticizes, discredits, or otherwise discourages the in-circuit emulator as an alternative to the program monitor, a person of ordinary skill in the art would not be motivated to combine prior art in-circuit emulator with Marik according to the decision In re Grasselli.

For the reasons discussed above, Marik does teach away from in-circuit emulators. Moreover, Grunert (Abstract; Col 1, line 34- 65) and Dey (Abstract) are directed to in-circuit emulators. Therefore, Marik teaches away from combining with references Grunert and Dey according to the decision In re

Grasselli. It is respectfully submitted that Independent Claim 1 is, since the combination of Marik, Grunert, and Dey is improper, patentable and is in condition for allowance.

Even if the combination of Marik, Grunert, and Dey is proper, it is respectfully argued that Independent Claim 1 is patentable over the combination of Marik, Grunert, and Dey because the combination of Marik, Grunert, and Dey fails to disclose and fails to make obvious all the claim limitations of Independent Claim 1. In particular, Independent Claim 1 is directed to an In-Circuit Emulation system breakpoint control and recites, “a microcontroller; a virtual microcontroller... a breakpoint lookup table which is accessed in response to operation of said virtual microcontroller,” (emphasis added).

At pages 3 and 5-6 of the Final Office Action, the Debug Parameter Table (Figures 1 and 2) of Marik is cited as corresponding to the breakpoint lookup table of Independent Claim 1. The breakpoint lookup table of Independent Claim 1 is accessed in response to operation of the virtual microcontroller. However, it is admitted at page 6 of the Final Office Action that Marik does not disclose a virtual microcontroller. Thus, Marik fails to disclose the breakpoint lookup table of Independent Claim 1 which is accessed in response to operation of the virtual microcontroller.

Grunert and Dey also fail to disclose a breakpoint lookup table which is accessed in response to operation of the virtual microcontroller, as in Independent Claim 1. Moreover, Grunert and Dey do not disclose and do not make obvious the breakpoint lookup table limitations of Independent Claim 1 not shown by Marik since the Final Office Action at pages 5-6 specifically relies on Marik to support the rejection of the breakpoint lookup table limitations of Independent Claim 1.

As discussed above, the combination of Marik, Grunert, and Dey does not disclose and does not make obvious all the claim limitations of Independent Claim 1. Therefore, it is respectfully submitted that Independent Claim 1 is patentable over the combination of Marik, Grunert, and Dey and is in condition for allowance.

Dependent Claims 2-6 and 21 are dependent on allowable Independent Claim 1, which is allowable over the combination of Marik, Grunert, and Dey. Hence, it is respectfully submitted that Dependent Claims 2-6 and 21 are patentable over the combination of Marik, Grunert, and Dey for the reasons discussed above.

Independent Claims 7 and 14 recite limitations similar to limitations of Independent Claim 1. Specifically, Independent Claims 7 recites the limitations, “storing a breakpoint lookup table in a virtual microcontroller...at each instruction

of the sequence of instructions to be executed by said virtual microcontroller,  
inspecting the breakpoint lookup table for a set break bit associated with  
instruction,” (emphasis added). Independent Claims 14 recites the limitations,  
“the virtual microcontroller having a breakpoint lookup table...at each instruction  
of the sequence of instructions to be executed by said virtual microcontroller,  
inspecting the breakpoint lookup table for a set break bit associated with  
instruction,” (emphasis added). It is admitted at page 6 of the Final Office Action  
that Marik does not disclose a virtual microcontroller. Thus, Marik fails to  
disclose storing a breakpoint lookup table in a virtual microcontroller and fails to  
disclose at each instruction of the sequence of instructions to be executed by the  
virtual microcontroller, inspecting the breakpoint lookup table as in Independent  
Claims 7. Also, Marik fails to disclose the virtual microcontroller having a  
breakpoint lookup table and fails to disclose at each instruction of the sequence  
of instructions to be executed by the virtual microcontroller, inspecting the  
breakpoint lookup table as in Independent Claims 14.

Grunert and Dey also fail to disclose storing a breakpoint lookup table in a  
virtual microcontroller, fail to disclose the virtual microcontroller having a  
breakpoint lookup table, and fail to disclose at each instruction of the sequence  
of instructions to be executed by the virtual microcontroller, inspecting the  
breakpoint lookup table, of Independent Claim 7 or 14. Moreover, Grunert and  
Dey do not disclose and do not make obvious the breakpoint lookup table  
limitations of Independent Claims 7 and 14 not shown by Marik since the Final  
Office Action at pages 5-6 and 11-12 specifically relies on Marik to support the

rejection of the breakpoint lookup table limitations of Independent Claims 7 and 14.

As discussed above, the combination of Marik, Grunert, and Dey fails to disclose and does not make obvious all the claim limitations of Independent Claims 7 and 14. Therefore, Independent Claims 7 and 14 are patentable over the combination of Marik, Grunert, and Dey and are in condition for allowance for the reasons discussed in connection with Independent Claim 1.

Dependent Claims 8-13 and 22 and Dependent Claims 17-20 and 23 are dependent on allowable Independent Claims 7 and 14, respectively, which are allowable over the combination of Marik, Grunert, and Dey. Hence, it is respectfully submitted that Dependent Claims 8-13 and 22 and Dependent Claims 17-20 and 23 are patentable over the combination of Marik, Grunert, and Dey for the reasons discussed above.

## CONCLUSION

It is respectfully submitted that the above claims, arguments and remarks overcome all rejections and objections. All remaining claims (Claims 1-14 and 17-23) are neither anticipated nor obvious in view of the cited references. For at least the above-presented reasons, it is respectfully submitted that all remaining claims (Claims 1-14 and 17-23) are in condition for allowance.

The Examiner is urged to contact Applicants' undersigned representative if the Examiner believes such action would expedite resolution of the present Application.

Respectfully submitted,

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Petition For One Month Extension

The Applicants herewith petition the Director of the United States Patent and Trademark Office to extend the time for reply to the Office action dated June 30, 2008 for One month.

Please Charge my deposit account number 50-4160, in the amount of \$130 to cover the cost of the extension. Any deficiency or overpayment should be charged or credited to the above numbered deposit account.